A3 Super II

3-axis Gyro & Flight Stabilizer for fixed-wing

User Manual

2015.4.20 Revision

For Firmware Version V1.1, V1.0, Data Version V1.0

Copyright ©2011-2015 HOBBYEAGLE. All Rights Reserved.

http://www.hobbyeagle.com

Package Contents

Main Controller × 1

The main controller has a built-in 32-bit MCU and a MEMs sensor consist of a 3-axis gyroscope and a 3-axis accelerometer. There are up to 7 input channels and 5 output channels. It also has a 4-pin data interface for connecting the program card and PC. A RGB LED is used to display the operation state. The main controller is small in size and light in weight, it can be attached flat or upright, and even upside down under the plane.

Program Card × 1

The program card is used to setup the controller more quickly and easily, especially in the field. The card has a white backlit LCD screen and supports both Chinese and English languages. The firmware of the card can be upgraded online and it can be also used for other products from HOBBYEAGLE.

Receiver Cable × 3

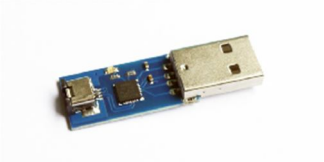
Cables used to connect the main controller and the receiver. Including male to male power lead 15cm × 1, combined signal lead 15cm × 2.

Data Cable × 1

Cable used to connect the program card or PC.

USB Adapter × 1

This adapter is used to connect to the USB port of PC.



3M Double-sided Tapes × 2

The double-sided tapes are used to attach the controller on the fuselage.

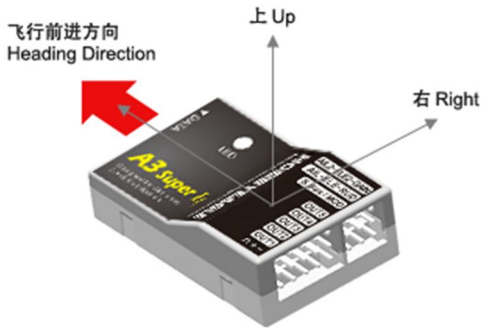
Package Contents 2
Installation 5
Connection 6
Standard Receiver 6
Futaba S.Bus / S.Bus 2 6
Flight Modes 8
Gyro Off Mode 8
Normal Mode 8
3D AVCS Mode 8
Auto-balance Mode 8
Auto-hover Mode 8
User Defined Mode 8
Stick Control Modes 9
Manual Mode (MM) 9
Auto Mode (RR/AR) 9
Wing Type 10
LED Descriptions 11
Gyro Direction 11
Confirm the gyro direction on Aileron 12
Confirm the gyro direction on Elevator 12
Confirm the gyro direction on Rudder 12
Quick Start 13
Config Software 14
Software and USB Driver Installation 14
GUI 14
Main Menu 15
Language 15
Connection Wizard 16
Read 17
Write 17
Firmware Update 17

Basic Settings....19
Wing Type....20
Mounting....20
Gain....20
Radio....20
Level Offset....22
Hover Offset....23
Debug Mode....23
Program Card....24
Buttons....24
Connection....24
Language....24
Menu Operation....24
Option Selection....25
Value Modification....25
Specifications....25

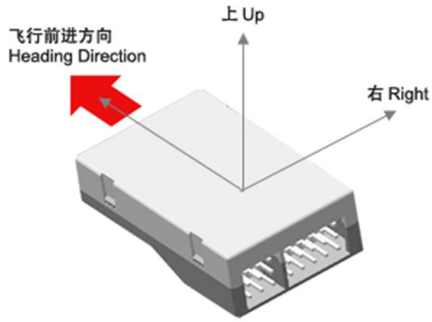
Installation

The controller must be mounted on the platform inside the airframe by using one of the provided double-sided tapes. When mounting, try your best to mount the controller as close to the C.G. as possible. Pay attention that the edges of the controller unit are all parallel with the corresponding axes of the plane, and make it parallel to the mounting platform. The controller can be attached flat or upright, and even upside down under the plane. The illustration shows you the 4 different mounting orientations. However, no matter which orientation to select, you have to ensure that the side of DATA interface is always pointing to the plane's heading direction, otherwise the stabilizer will not work properly.

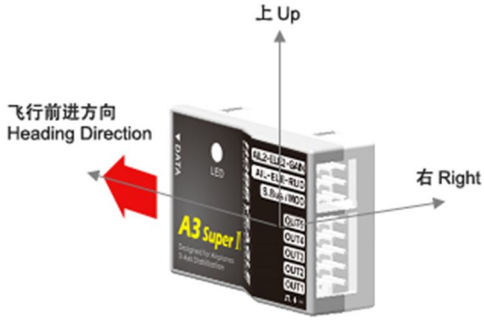
Flat
Horizontal Face Up



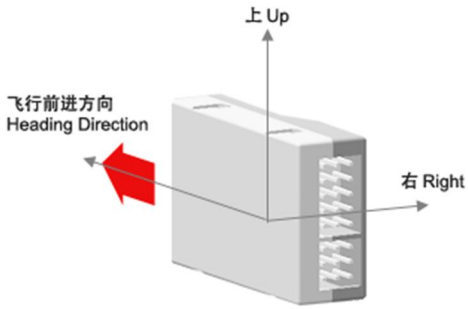
Flat Inverted
Horizontal Face Down



Upright
Vertical



Upright Inverted
Vertical Upside Down



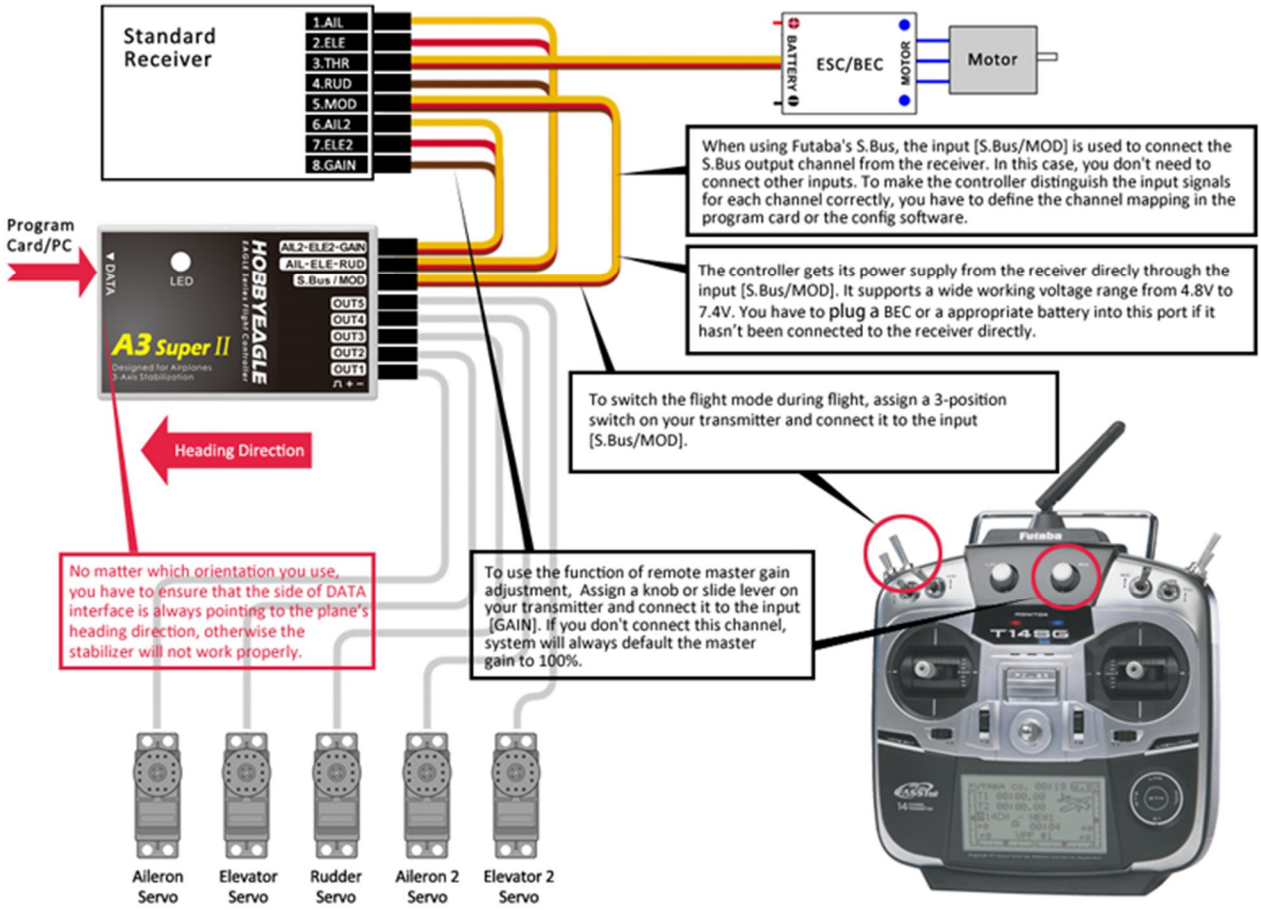
VERY IMPORTANT!

1. **You need only one piece of the double-sided tapes each time. A soft or thick mounting may probably hinder the performance of the gyroscope.**
2. **Never use the hot-melt glue or nylon ties to fix the controller onto the airframe!**
3. **The controller is a sensing device, please make enough space around it and keep as far away from other devices or wires as possible.**

Connection

A3 Super supports a standard receiver or a Futaba's S.Bus receiver. You don't need to connect all of the 7 input channels, just connect those you want to use. The controller will detect the input signal for each channel and enable or disable the correlation functions automatically. For example, if the input [AIL2] is connected, the dual aileron control system will be activated by the controller. It's recommended that you should at least connect the channels for [AIL], [ELE], [RUD] and [MOD].

Standard Receiver


Standard Receiver
1.AIL
2.ELE
3.THR
4.RUD
5.MOD
6.AIL2
7.ELE2
8.GAIN
BATTERY
ESC/BEC
MOTOR
Motor
When using Futaba's S.Bus, the input [S.Bus/MOD] is used to connect the S.Bus output channel from the receiver. In this case, you don't need to connect other inputs. To make the controller distinguish the input signals for each channel correctly, you have to define the channel mapping in the program card or the config software.
The controller gets its power supply from the receiver direcly through the input [S.Bus/MOD]. It supports a wide working voltage range from 4.8V to 7.4V. You have to plug a BEC or a appropriate battery into this port if it hasn't been connected to the receiver directly.
Program Card/PC
DATA
LED
AIL2-ELE2-GAIN
AIL-ELE-RUD
S.Bus / MOD
OUT5
OUT4
OUT3
OUT2
OUT1
HOBBYEAGLE
A3 Super II
Heading Direction
To switch the flight mode during flight, assign a 3-position switch on your transmitter and connect it to the input [S.Bus/MOD].
No matter which orientation you use, you have to ensure that the side of DATA interface is always pointing to the plane's heading direction, otherwise the stabilizer will not work properly.
To use the function of remote master gain adjustment, Assign a knob or slide lever on your transmitter and connect it to the input [GAIN]. If you don't connect this channel, system will always default the master gain to 100%.
Futaba
T14SG
Aileron Servo
Elevator Servo
Rudder Servo
Aileron 2 Servo
Elevator 2 Servo

Futaba S.Bus / S.Bus 2

When using a Futaba's S.Bus receiver, you can make a single-line connection between the receiver and the controller. Just plug the male to male lead into the input [S.Bus/MOD] and from the receiver's s.bus output pin. In this case, you don't need to connect other inputs of the controller anymore. As the S.Bus is a single-line solution all channels are transmitted via one single line, in order to make the controller distinguish the input signals for each channel correctly, you have to tell it the channel mapping on your transmitter by using the program card or the config software. A3 Super supports a maximum of 16 channels when using S.Bus solution.

VERY IMPORTANT!

1. **Please respect the polarities for the plugs going to the controller. The orange signal line must always be on the top and the brown on the bottom.**
2. **Check all the connectors and make sure that all of them are firmly connected to the pins.**
3. **If both [AIL] and [AIL2] are connected, the dual aileron control function will be activated. The [OUT1] and [OUT4] are used to connect the 2 aileron servos. If the input [AIL2] is not connected, the controller will switch to single aileron input mode. In this case, you can still plug the 2 aileron servos into [OUT1] and [OUT4], just as using a Y-cable on the aileron. It's quite the same as when using the dual elevator.**
4. **Please refer to the manual of your radio to find the right way to assign a 3-position switch for flight mode control, and a knob or slide lever for remote master gain control.**
5. **You have to reboot the controller after you change the receiver type to make the new setting take effect.**

Port Description	
Inputs	
AIL	For aileron control
ELE	For elevator control
RUD	For rudder control
AIL2	For aileron 2 control
ELE2	For elevator 2 control
GAIN	For remote master gain control
S.Bus/MOD	For flight mode switch or Futaba's S.Bus input. It's also the power supply interface of the controller.
Outputs	
OUT1	To aileron servo
OUT2	To elevator servo
OUT3	To rudder servo
OUT4	To the second aileron servo
OUT5	To the second elevator servo
Others	
DATA	To the program card and the PC

Flight Modes

A3 Super provides 6 different flight modes.

Gyro Off Mode

Choose this mode to disable the gyros for all channels. The plane will be completely under the control of the radio. The plane will go back to its previous performance when operating it in this mode. Usually it is only used to test.

Normal Mode

Normal mode is the most basic application of the gyro. In this mode, the gyro will sense angular velocity on each axis and make a momentary reaction. The normal mode is suitable for all types of fixed-wings, it can effectively improve the stability of your plane specially on a windy day.

3D AVCS Mode

The AVCS mode is an advanced application of the gyro. By adding an integral algorithm to the gyros, the controller will try to lock the plane to its previous attitude if there is no command sent from the transmitter in a flight. This mode can effectively help you to accomplish such hard actions as hover and knife edge. But this mode is designed especially for the 3D planes, it's not suitable for the planes those not designed for 3D flight.

Auto-balance Mode

The auto-balance mode is designed for the new beginners or the FPV applications. When operating in this mode, the controller will command the plane to maintain level flight automatically when you release the sticks. When switch it to this mode from any other modes in an emergency, the plane will recover to the level flight automatically, which we call "one-click rescue".

Auto-hover Mode

The auto-hover mode is another form of the self balance ability of the controller. The only difference is that the correction from the gyro will be applied to both pitch and yaw axes, to keep the plane always vertical. When switch to this mode, the plane will lift its nose and start to hover automatically, which we call "one-click hover".

User Defined Mode

This mode allows you to select different mode for each axis, from normal , 3D or gyro off mode.

Stick Control Modes

A3 Super provides 2 different control modes for the sticks, including Manual Mode and Automatic Mode. The default is Manual Mode when you first get it.

Manual Mode (MM)

When manual mode is chosen, the sticks are used to control the surfaces directly as usual. That is, there is no rotation rate or tilt angle locking and limitation when you move the sticks. All the servos will be completely under the control of the radio. It's more obvious to the users because you can see the servos move following the sticks as you expected. The plane will maintain its original control behavior when operating it in this mode.

Auto Mode (RR/AR)

When using this mode, the controller will take over the control of all servos. The sticks are used to control the rotation rate (RR) on each axis when flying in normal or 3D mode, or the tilt angle rate (AR) on each axis when flying in auto-balance or auto-hover mode. The max rotation rate and max tilt angle can be set in the program card or the config software. In this mode, the controller will handle the position of the surfaces based on the actual rotation rate or tilt angle of the plane intelligently. This is why the movement of the servo will become different from the manual mode.

Flight Mode	Stick Control Mode	
	Manual Mode	Auto Mode
Gyro Off Mode	MM	MM
Normal Mode	MM	RR
3D AVCS Mode	MM	RR
Auto-balance Mode	MM	AR
Auto-hover Mode	MM	AR
User Defined Mode	Depends on the flight mode of each axis	

MM: Stick controls the servo directly.

RR: Stick controls the rotation rate on each axis.

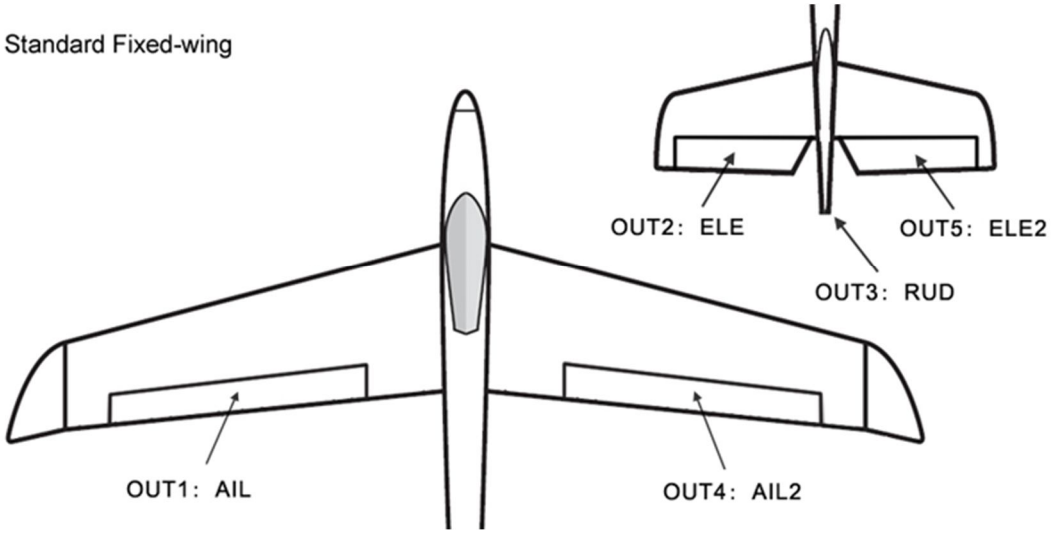
AR: Stick controls the tilt angle rate on each axis.

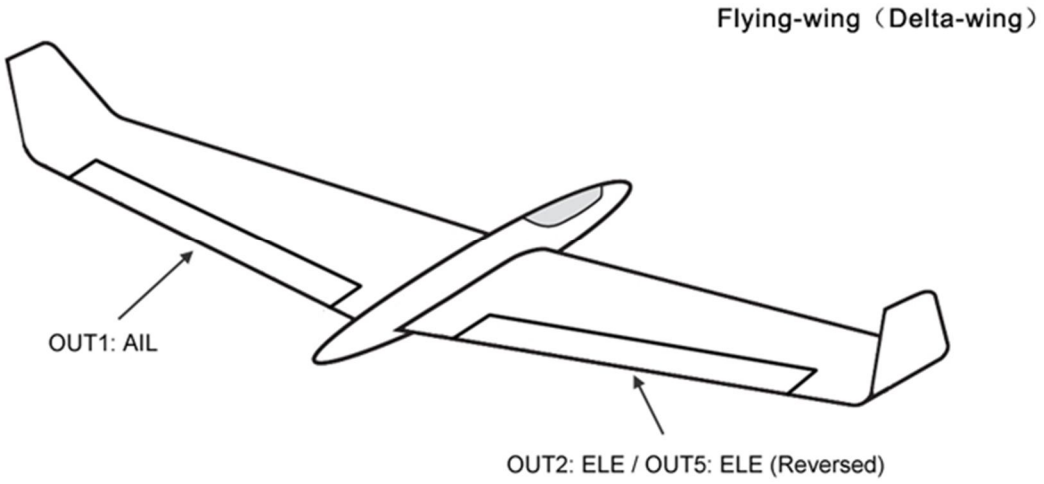
* Whatever the setting of control mode is, the stick is always used to control the servo directly when operating in gyro off mode or the gyro of the corresponding axis has been disabled.

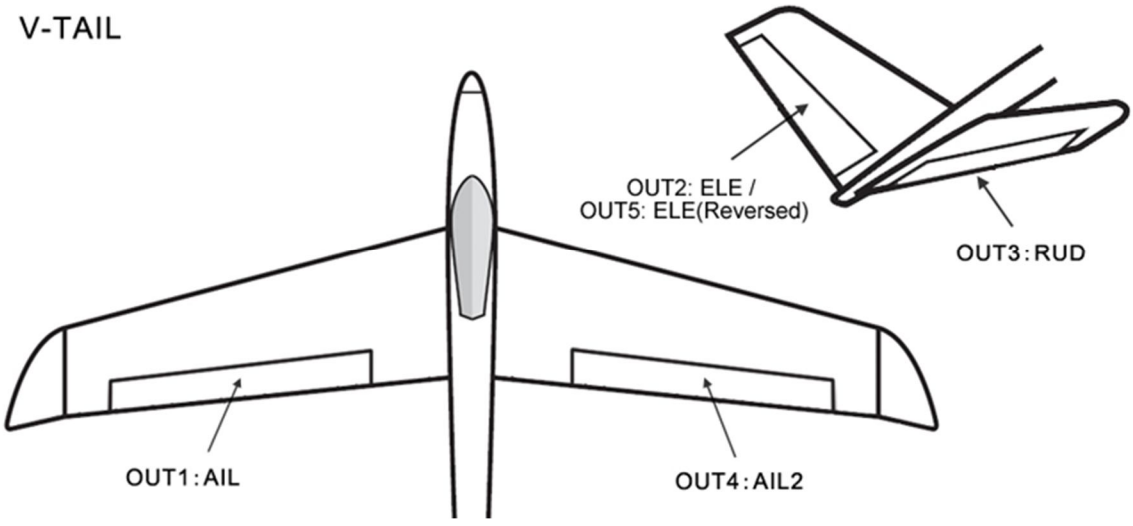
⚠ **When the stick control mode is set to Auto Mode, we suggest you always set the gyro gain to at least 50% or larger, a lower gain setting will cause the plane hard to control or even crash!**

Wing Type

A3 Super supports a standard wing type of the fixed-wing, including 1AIL+1ELE, 1AIL+2ELE, 2AIL+1ELE, 2AIL+2ELE, and a delta-wing or V-tail mixing. Connect the servos following the illustration below.







NEVER use the delta-wing and V-tail mixing functions on your transmitter, all you need is to choose a single 4-channel fixed-wing model type on your radio at any time.

LED Descriptions

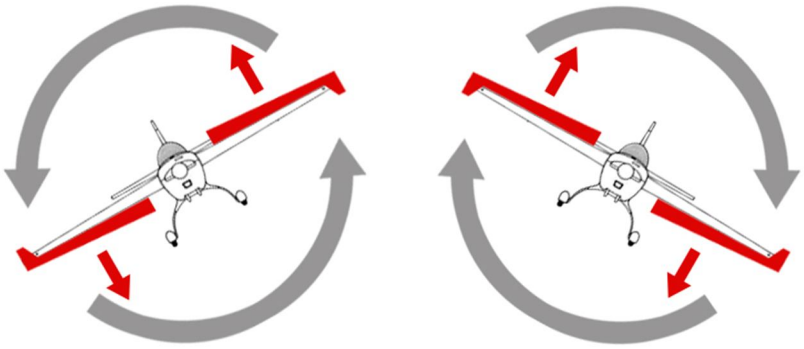
Flight Mode		
	Solid Red	Gyro off Mode, or the gyros has been disabled on all channels
	Solid Blue	Normal Mode
	Solid Violet	3D AVCS Mode
	Solid White	Auto-balance Mode
	Solid Green	Auto-hover Mode
	Solid Yellow	User Defined Mode
Power On		
	White, 2 seconds	Ready to start initialization, don't move the plane!
	White, Fast Flashing, 2 seconds	Power-on gyro calibration, don't move the plane!
	Red, Fast Flashing	Initialization failed, please reboot the controller.
Operating		
	White, Fast Flashing, 1 sec	Stick centering
	Green, Flashing, 6 seconds	Auto level calibrating or auto hover calibrating
	Red, Slow Flashing	No signal input, you must get AIL, ELE and RUD connected
	Red, Rapid Flashing	Sensor failure, please contact us.

Gyro Direction

It's extremely important to make sure that the gyro reacts in the correct direction on all axes before flight, otherwise it could lead to losing control or even crash after takeoff!

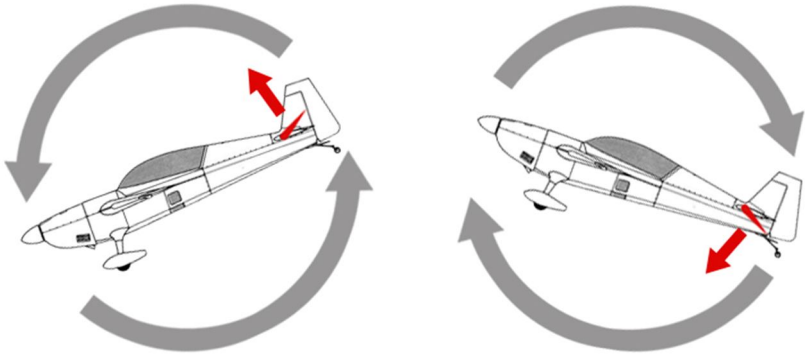
Confirm the gyro direction on Aileron

Quickly move the right wing downward around the roll axis, the right aileron surface should flap down and the left flap up as shown below.



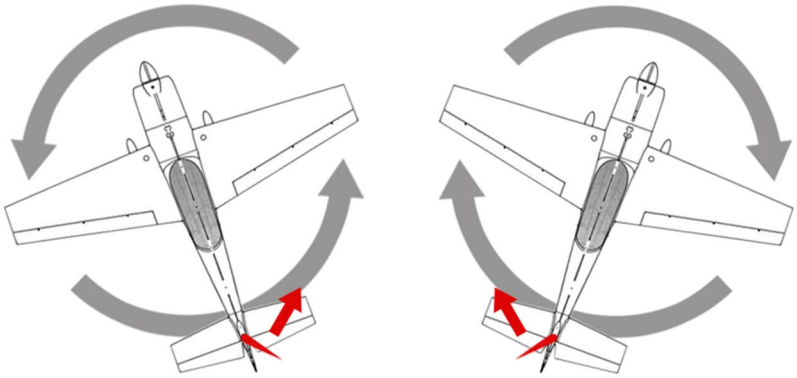
Confirm the gyro direction on Elevator

Quickly move the nose of the plane downward around the pitch axis, the elevator surface should flap up as shown below.



Confirm the gyro direction on Rudder

Quickly move the nose of the plane to the left around the yaw axis, the rudder surface should flap right as shown below.



Quick Start

Follow these steps to complete your first-time installation

STEP 1 Before installing, make sure all the surfaces are well connected to the servos by the linkage rods. Install the receiver and bind it to your radio system in advance.

STEP 2 Switch on the transmitter and create a new model, select a single 4-channel fixed-wing model type. Assign a 3-position switch for the mode control. Assign a knob or slide lever for remote master gain control if needed. Keep all the sticks in the middle position (except throttle).

STEP 3 Now mount the controller on the airframe, connect the required channels between the receiver and the controller.

STEP 4 Power on the plane, the LED will turn WHITE for about 2 seconds then start to blink very rapidly, which means the gyro is calibrating, don't move the plane and the sticks during this period.

STEP 5 After a successful initialization. Insert the program card and select the correct mounting orientation that you are using. Change the receiver type if you are using a S.Bus connection then reboot the controller to make the new setting take effect.

STEP 6 Switch to normal mode or gyro off mode. Adjust the center position for all servos, make your desired dual rate or expo settings if needed. Check the direction of movement of the servos by moving the sticks one by one. If the servo moves in an opposite direction, reverse it on your transmitter.

STEP 7 Switch to normal mode, check the gyro direction one by one, reverse it if the gyro reacts in a wrong direction.

STEP 8 Insert the program card again, assign the desired flight mode to the 3-position switch. If you need to change any other settings, do it now.

STEP 9 The installation is complete. It's ready for your first flight.

⚠ **When system is powered on, you must not move the plane and sticks on the transmitter until the initialization is finished (about 4 seconds).**

Config Software

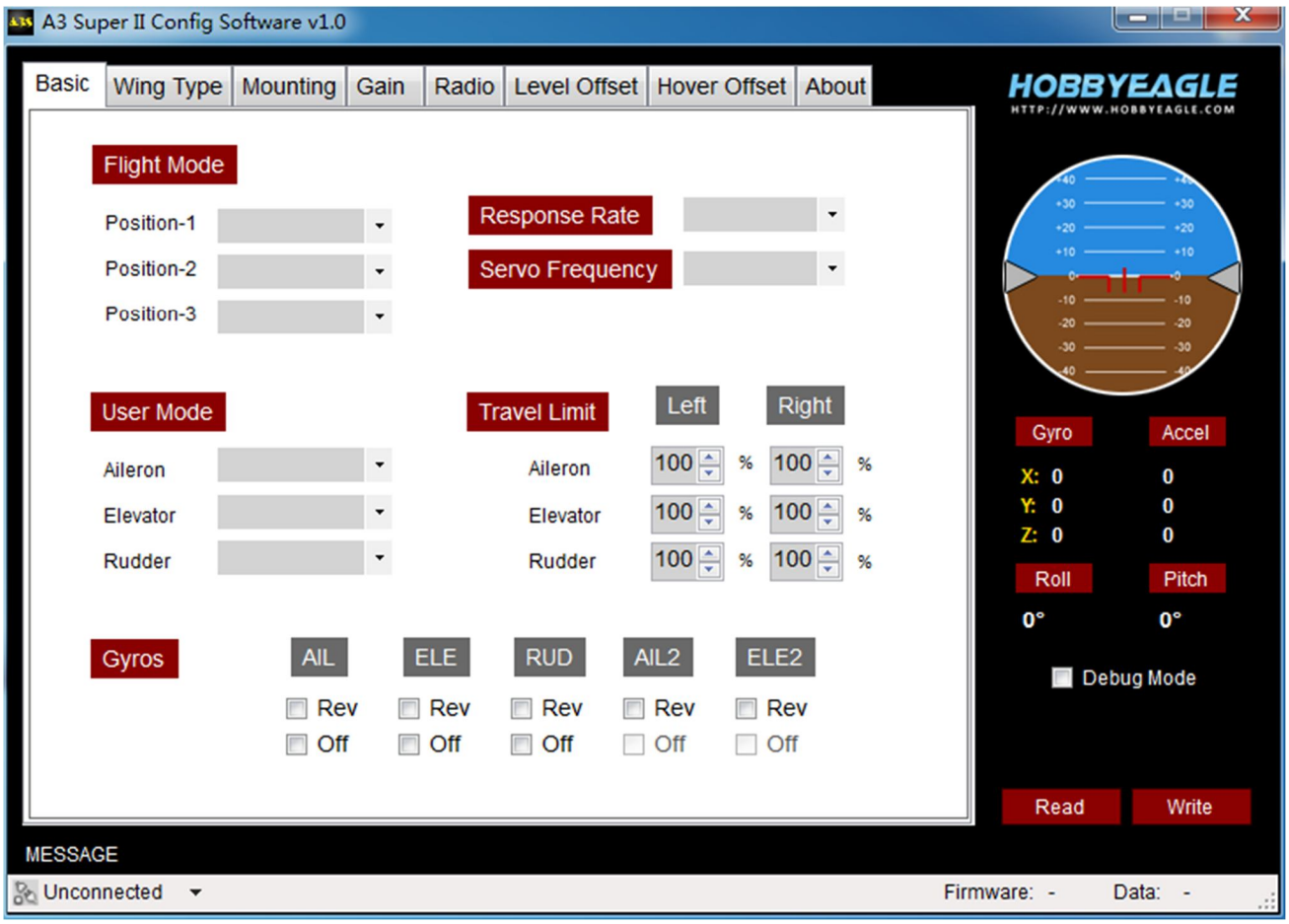
Software and USB Driver Installation

Please download the USB driver and the config software from our website www.hobbyeagle.com. Run the setup.exe and follow the instructions to complete installation. After setup, you will then get an icon on your desktop, as shown to the right.

VERY IMPORTANT!

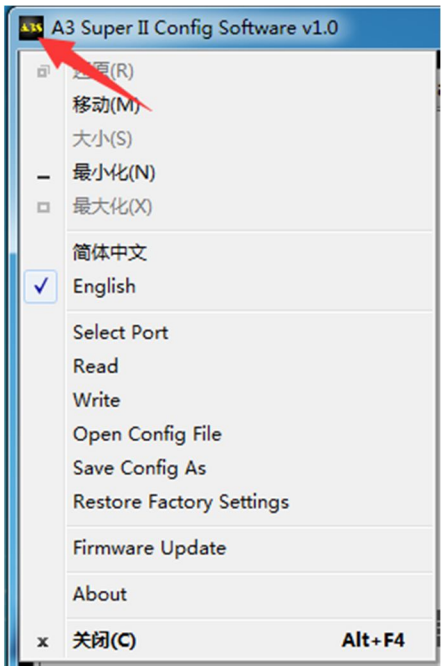
1. **The software only supports Win XP, Win 7 and Win 8.**
2. **If you are using Win XP, you have to install the Microsoft .NET Framework 2.0 before installing the software. The framework can be downloaded from our website or the Microsoft's website.**

GUI



Main Menu

Click the icon on the title bar to open the main menu. The main menu contains all functions.

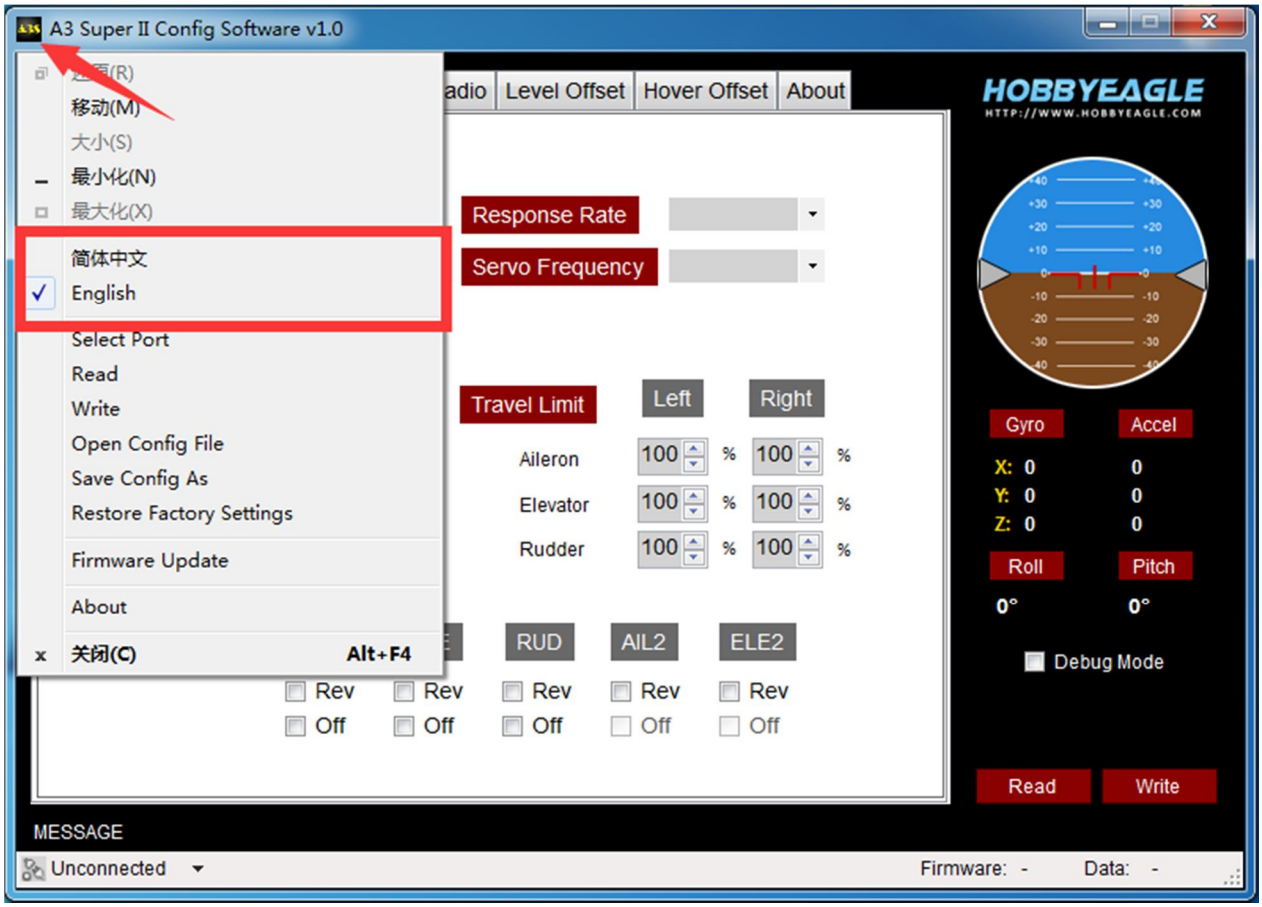


Menu Description

简体中文/English	Select language between English and Chinese.
Select Port	Open the connection wizard.
Read	Read settings from the controller.
Write	Write settings into the controller.
Open Config File	Load settings from a file.
Save Config As	Save current settings to a file.
Restore Factory Settings	Reset the controller to the default settings.
Firmware Update	Open the firmware update wizard.
About	View the version and copyright informations.

Language

You can select the language from the main menu. You need to restart the software after change the language.



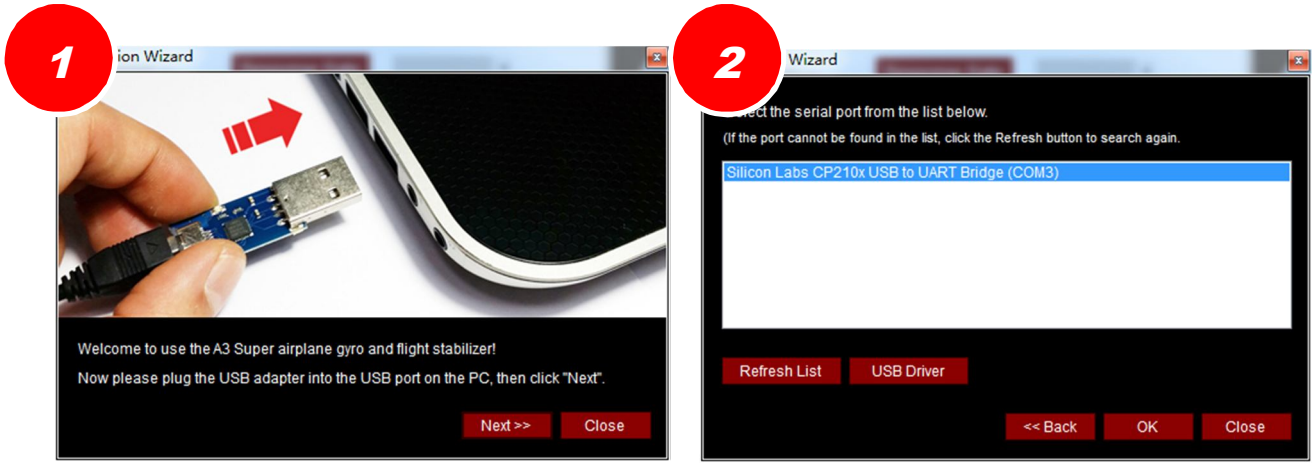
Connection Wizard

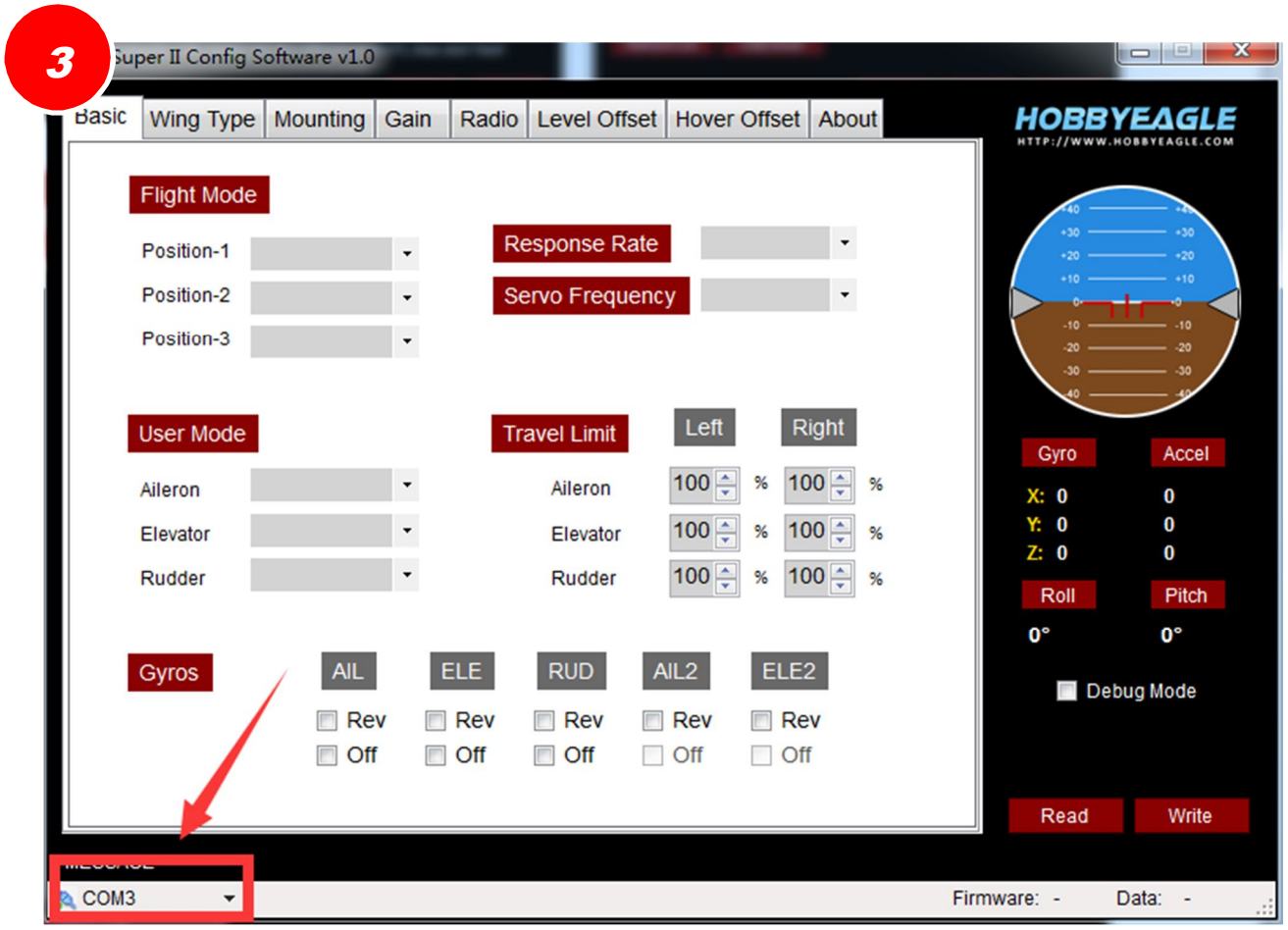
STEP 1 Click “Select Port” from the main menu to open the Connection Wizard.

STEP 2 Plug in the USB adapter to the USB port on your PC, make sure you have installed the USB driver.

STEP 3 Click “Next”, the available ports will appear in the list, just select the correct one.

STEP 4 Click “OK” to back to the main form, now you can find the status of the port displayed on the left of the status bar.


1
ion Wizard
Welcome to use the A3 Super airplane gyro and flight stabilizer!
Now please plug the USB adapter into the USB port on the PC, then click "Next".
Next >>
Close
2
Wizard
(If the port cannot be found in the list, click the Refresh button to search again.
Silicon Labs CP210x USB to UART Bridge (COM3)
Refresh List
USB Driver
<< Back
OK
Close



Read

After selecting the port, connect the controller to the USB adapter and wait until the initialization is done. Click “Read” to read the settings to the software from the controller. After a successful reading, you can see the current firmware version and data version of the controller in the lower-right corner of the form.

VERY IMPORTANT!

1. **Please wait until the initialization is finished before you operating the software.**
2. **The firmware version number of the program card and the config software are corresponding to the Data Version that the controller is using. That means you don’t need to upgrade the program card or the software if the data version number doesn’t change even if you have upgraded the firmware of the controller.**

Write

After making your change of the settings, click “Write” to save the modified settings into the controller. The new settings will take effect immediately.

Firmware Update

VERY IMPORTANT!

1. **Both the controller and the card can be upgraded online.**
2. **We use a boot loader to enter the update program on our products. Please don’t power the controller or the card before update.**
3. **You don’t need to remove the controller from your plane, or disconnect the servos and receiver from the controller during a firmware update operation.**
4. **The update wizard needs to get the available firmware list from the server, please make sure your computer is connected to the internet.**

Procedure for Firmware Update

STEP 1 Click “Firmware Update” from the main menu to open the update wizard.

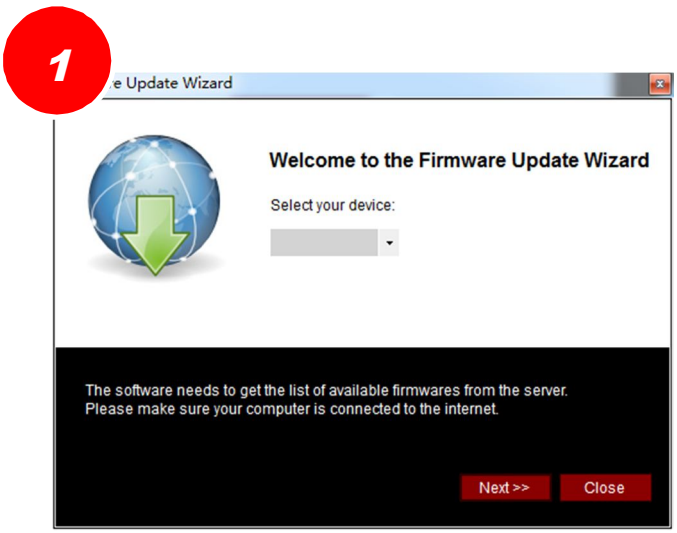
STEP 2 Select the target device in the list, controller or the card.

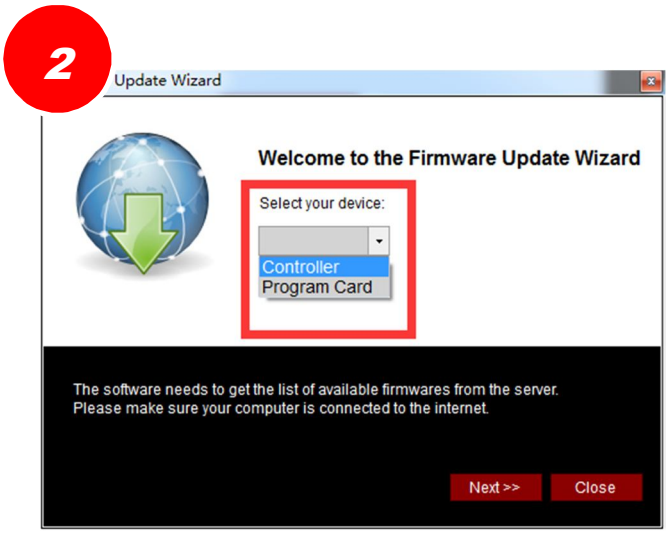
STEP 3 Click “Next”, the wizard will query the available firmware resource from the server. The newer version will be listed on top, you just need to select one that you want to update. Usually we will upgrade the firmware from a lower version to a newer one, but if you need, it also allow you to restore the firmware to a previous version.

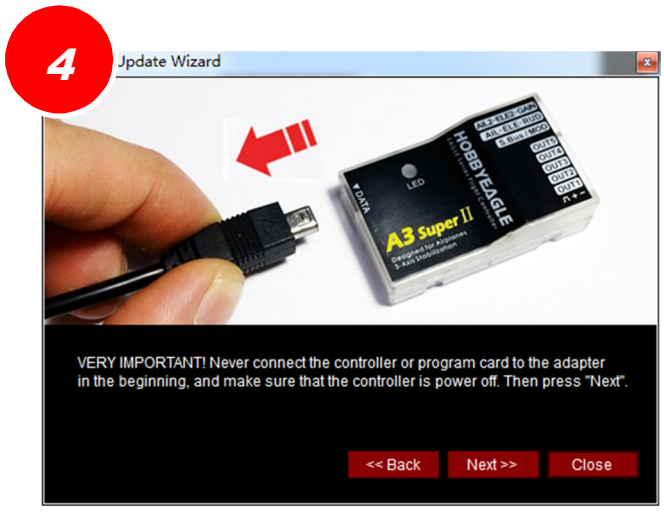
STEP 4 Click “Next”.

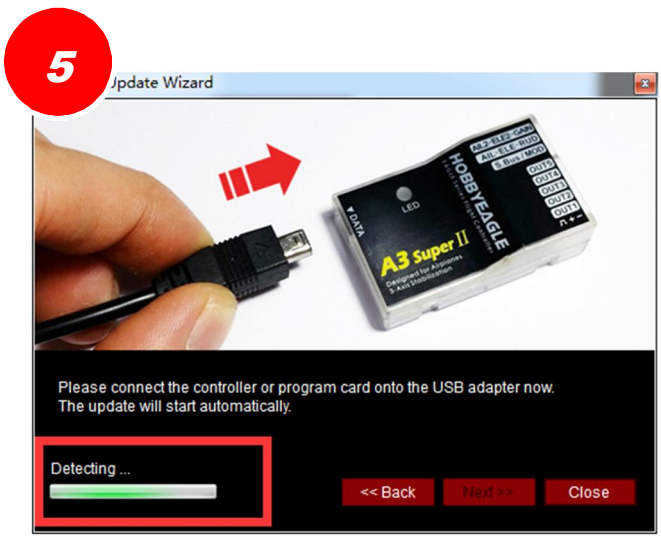
STEP 5 Click “Next” again, when a message “Detecting…” and a progress bar is shown in the lower-left corner, connect the controller or the card to the USB adapter and the update process will start automatically. Please don’t close the wizard and wait unit the update is complete.

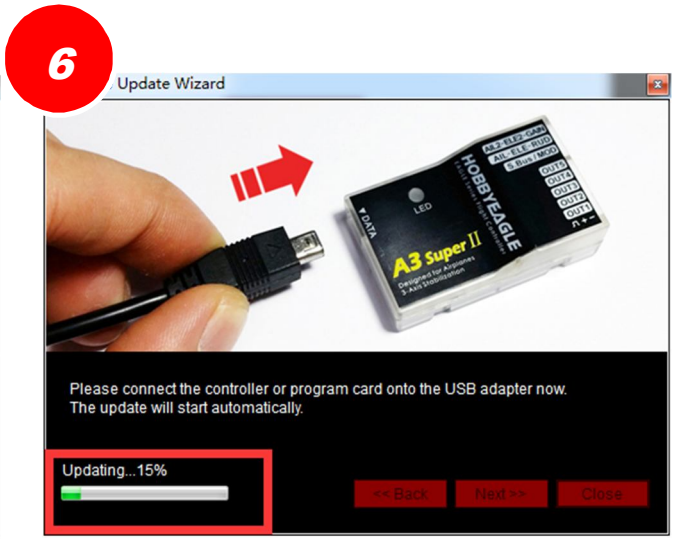
STEP 6 When the update is finished, click “Close” to close the wizard.


1
e Update Wizard
Welcome to the Firmware Update Wizard
Select your device:
The software needs to get the list of available firmwares from the server.
Please make sure your computer is connected to the internet.
Next >>
Close


2
Update Wizard
Welcome to the Firmware Update Wizard
Select your device:
Controller
Program Card
The software needs to get the list of available firmwares from the server.
Please make sure your computer is connected to the internet.
Next >>
Close


4
Jpdate Wizard
VERY IMPORTANT! Never connect the controller or program card to the adapter
in the beginning, and make sure that the controller is power off. Then press "Next".
<< Back
Next >>
Close





Basic Settings

Flight Mode By using a 3-position switch, you can change the flight mode in flight, here you can assign your desired flight mode for each position of the switch. If the input [MOD] is not connected, system will always default to the mode that has been assigned to Position-1.

User Mode Select different flight mode separately for aileron, elevator and rudder.

Response Rate A3 Super uses a high sensitivity and high precision MEMs sensor, you need to try your best to reduce the influence caused by vibration during installation. This option give you another way to filter the noise by software. The default setting is Normal, usually it will be suitable for most planes. However, if you have made effective measures to reduce the vibration, you can try a faster response rate setting to get a better performance. On the contrary, you should use a slower rate when the controller is working in a high vibration situation.

Servo Frequency It's used to select the working frequency for the servos. To optimize the performance of the controller, the rule is the higher the better! But please note that analog servos usually tolerate only 50Hz. Digital servos usually allow higher frequencies, but this has to be verified in the manual of your servos. If you don't know what the maximum frequency tolerated by your servos is, please leave this option to its default setting.

⚠ A higher working frequency can lead to failure of your servos!

Travel Limit This function is used to limit the maximum travel range for the servos. The max limit is determined by the maximum possible control travel of the mechanism. The limits can be adjusted from 0 to 100%, the default setting is 100%, corresponding to a pulse width from 1020uS to 2020uS. After setting a limit, the range of movement of the servos will be limited within the safety range. The setting for aileron channel will be applied to OUT1 and OUT4. The setting for elevator channel will be applied to OUT2 and OUT5. The setting for rudder will be applied to OUT3.

Gyros Here you can reverse the gyro or turn off the gyro separately for each channel.

Wing Type

Select your wing type, see Page 10.

Mounting

Select the mouting orientation of the controller, see Page 5.

Gain

This tab is used to setup the gain for each flight mode. The gain is affected by many factors there is no standard answer to that how much it should be. You need to fine-tune to get the best result. The plane will be oscillating in the corresponding direction if the gain is set too high, this is a result of over amplification of the gyros, this rapid back and forth movement can make the plane hard to control. But if the gain is too low, the plane will likely to be hard to control. We suggest you start your first flight with a lower gain setting and then increase them gradually. You can also use the remote master gain channel to get a more convenient way to adjust the gain when in a flight.

Gain Rate In order to meet more needs, A3 Super provides 3-level (Small, Medium and Large) gain level for each flight mode. You can choose a larger level when the current gain is still not large enough, even when it has been set to the maximum. However it is recommended to use as small level as possible to improve the precision of gain adjustment.

VERY IMPORTANT!

1. **A3 Super is aimed at all types of fixed-wing airplanes. Usually the default gain settings are ready to go. However, sometimes you still have to adjust the settings manually according to your plane to get the best flying experience.**
2. **To get the best performance in auto-hover mode, try to use the maximum gain for auto-hover mode.**
3. **The Auto-balance or Auto-hover gain will be affected by the Normal Gain. Before adjusting the balance or hover gain, you need to get the appropriate normal gain setting first.**

Radio

All parameters related to the radio system can be setup within this tab.

Control Mode Choose the stick control mode, see Page 9.

Receiver Type Choose the receiver type, remember to reboot the controller after change the type.

Rotation Rate Choose the max rotation rate of the plane. This setting will only take effect when the stick control mode is set to Auto Mode. Also see Page 9 for more details about stick control mode.

Max Tilt Angle Choose the max tilt angle of the plane. The setting will only take effect when the stick control model is set to Auto Mode. Also see Page 9 for more details about stick control mode.

Stick Deadband The dead band is the range around the very center of the sticks at where the controller will not react. Some transmitters have the problem that when the sticks are brought back after an input, they are not exactly at the same center position as before which may generate a deviation on the corresponding function, although the sticks seems to be in the middle. This parameter can be adjusted between 0% and 10%, the default setting is 5%. You can set it higher if it is difficult to find the stick center position even the stick centering function has been applied already. The dead band setting is for all channels.

S..Bus Channels When you are using a S.Bus connection, you need to tell the controller that which channel is using for aileron, or elevator and so on. The controller should be told with the channel mapping before it can work properly. For example, if you are using channel 5 for the flight mode switch function, you have to select CH5 to the input [MOD]. If you are using channel 6 for the second aileron, you have to select CH6 to the input [AIL2]. Select "None" to tell the controller that you don't want to use this channel.

Stick Centering Stick centering is used to calibrate and re-learn the new center position of the sticks. Usually, in the first flight, you need to make a little trim to make the plane flying properly. Once the trims are set on your transmitter. You need to land the plane and perform a stick centering so the controller can re-learn the new adjustments that were just made. The stick centering is only for channels of aileron, elevator, rudder, aileron2 and elevator2, the mode and gain channels will be ignored when calibrating. And for those channels unconnected, the controller will skip them automatically. Stick centering needs only 1 second, while calibrating, the LED will blink WHITE rapidly.

Power-on Automatic Stick Centering

A3 Super will perform a stick centering automatically every time it starts, so you can change the trims anytime you need, the new center positions will be re-learned and saved in the next time it starts. Remember to keep all sticks (except throttle) in their middle position before power on the controller, and don't move them during initialization.

Perform a centering by toggling the switch

If you don't want to reboot the controller, you can perform a quick centering by fast toggling the flight mode switch twice (or more) within 1 second.

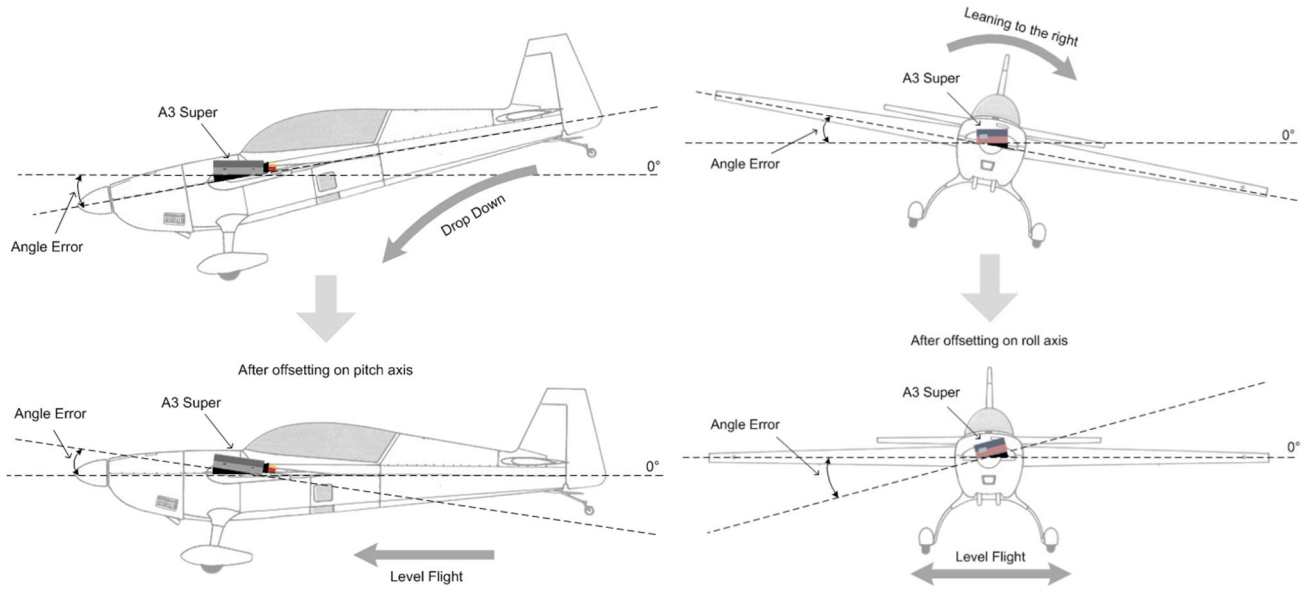
VERY IMPORTANT!

1. **If the servos drift to one side slowly when switching to 3D mode, you have to perform a stick centering.**
2. **NEVER perform a stick centering when in a flight! It can be dangerous because you may probably lost control of your plane for 1 second!**

Level Offset

This function is used to offset the absolute angle error caused by installation, and try to establish the appropriate level flight attitude of the plane when flying in auto-balance mode. If your plane drops down or up when switch to auto-balance mode, you will need to perform a level offset. Usually you just need to do it once after installation, the result will be stored inside the controller and takes effect all the time. The following illustrations show you that what happens if an angle deviation exists during installation.

How level offsetting works?



There are 2 methods to perform the level offset, including Manual Offset and Auto Level Calibration.

Auto Level Calibration

The auto level calibration is much easier we suggest you use this way in your first-time using the controller. Before calibrating, put the plane on the ground and keep it horizontally, click “Level Calibration” on the program card or the software to start calibration. While the calibration is being performed, the LED will keep blinking GREEN for about 6 seconds, don’t move the plane during this period. If you get a rapid RED flashing after the calibration, that means the deviation is too large (larger than±20deg), in this case , you have to re-install the controller.

Manual Level Offset

Manual offset allows you make a further adjustment for the angles. The max adjustable value is ±20° on both roll and pitch axes. Please note that there is no direct relation between the real moving direction of the servos and the positive or negative sign of the values, because it depends on which mounting orientation or gyro directions that you are using. For example, if the plane keeps dropping down in self-balance mode, you may need to increase or decrease the parameter for pitch to make the elevator surface a little upper than before, until you get a correct

level flight in pitch direction. For ease of observation, you can turn the balance gain larger temporarily when adjusting the parameters, and restore it after you finish the adjustment.

VERY IMPORTANT!

1. **Usually you would need to make the nose of the plane slightly upwards while performing the level calibration.**
2. **If the angle deviations are too large, please re-install the controller!**

Hover Offset

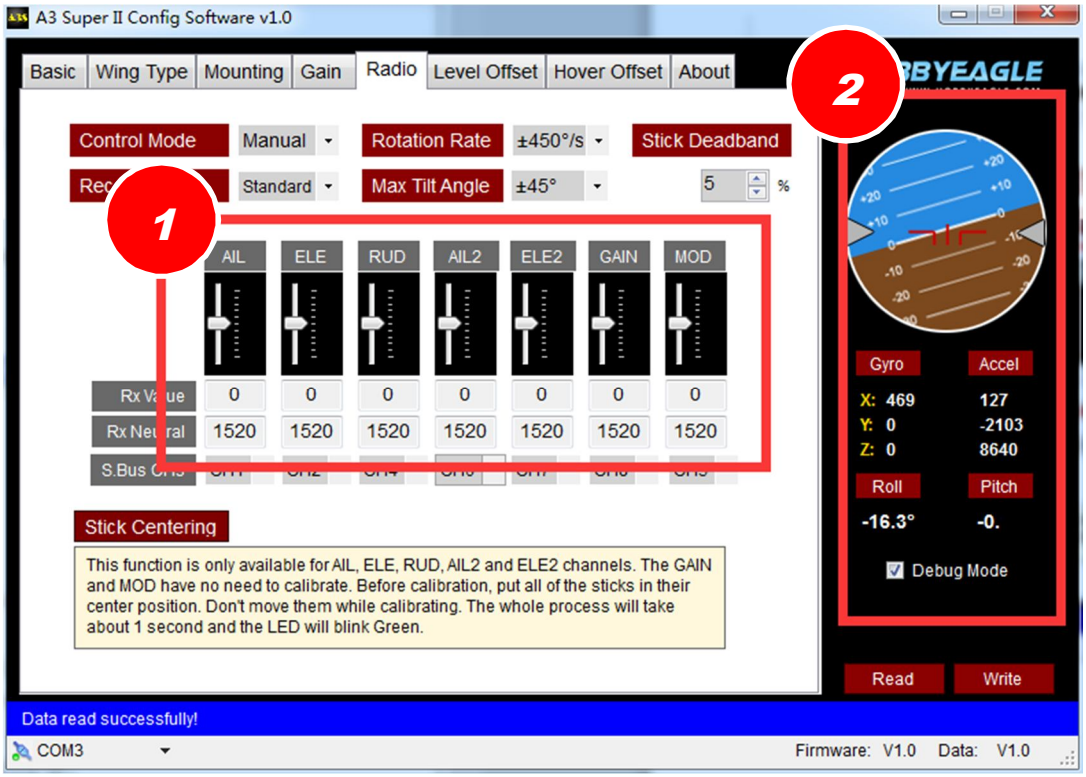
The hover offset is quite similar to the level offset. The only difference is the hover offset is used for auto-hover mode, and the offset takes effect in pitch and yaw axes but not roll and pitch axes. You need to hold the plane vertically instead of making it horizontally while calibrating. Refer to the section of level offset if you don't know how to perform a hover offset.

Debug Mode

The debug mode allows you to observe the real-time data from the controller, such as the radio input commands of all channels and the attitude data from the IMU.

① Radio Info Area After connecting to the receiver, you can see the stick movements here of all channels.

② IMU Info Area Displays all required data from IMU, such as the readings of gyroscope and accelerometer, and the estimated angle results.



Program Card

A full set of A3 Super contains a program card. This box can help you setting up all parameters of the controller more easily, especially when you are in the field. You will never need to carry out a laptop again when you have this box. The modifications made in the box will take effect immediately without a final confirmation or a reboot of the controller. Simply pulling out the box when you finish the setting.

Buttons

UP/+ Scroll up the menu or increase the value.

DN/- Scroll down the menu or decrease the value.

ESC Exit without saving the modified and return to the menu.

ENT Select an item or save the change , hold it for 2 seconds can reset the parameter to its default value.

Connection

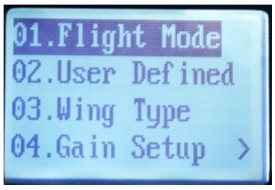
When the controller is working, plug in the card onto the DATA interface using the black data cable. The card will start to power on and read the settings from the controller. Press the [ESC] button can let you reload the settings again, after a reloading, the current data will be overwritten.

Language

The program supports Chinese and English languages. You can select the language in the system menu. Press and hold the [ENT] button while you plugging in the card can let you change the language more quickly.

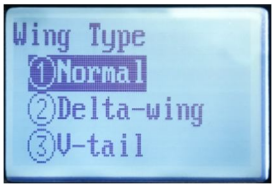
Menu Operation

By pressing the [UP/+] or [DN/-] button, you can select the functions in a menu. Press [ENT] to enter the selected item. When a second-level menu exists, the symbol “>” will appear on the right of the corresponding items.



Option Selection

When you are in a function, press [UP/+] or [DN/-] to switch to different options. Press [ENT] to confirm or [ESC] to cancel. The unconfirmed item will keep flashing until the [ENT] button is pressed.



Value Modification

When you are in a function, press [UP/+] or [DN/-] to select the parameter that you want to modify, press [ENT] to enter edit mode. In edit mode, the value will keep flashing, you can change its value by pressing [UP/+] or [DN/-]. Press [ENT] to confirm or [ESC] to cancel. Press and hold the [ENT] button more than 2 seconds can restore the parameter to its default setting.

Specifications

Main Controller	32-bit MCU
Sensor	3-axis gyroscope and 3-axis accelerometer
Gyroscope Scale Range	±2000dps
Accelerometer Scale Range	±4g
Input Signal	Standard PPM with center point 1520uS, or S.Bus serial data
Output Signal	PWM max frequency 333Hz, 1520±500uS
Input Voltage	4.8V～7.4V
Operating Temp	-10℃～50℃
Size	43×27×14mm
Weight	10g (excluding wires)